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## *Full Length Research Paper*

# Effect of applied water and discharge rate on wetted soil volume in loam or clay-loam soil from an irrigated trickle source

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## Abstract

This study was designated to determine the effect of different applied water by use of different emitter discharges on the wetting patterns of a loam or clay-loam soil under trickle source. Irrigation water was applied when the soil water depletion of 30 and 50% from available water capacity of soil in 0 - 90 depth. The discharge rates of 2 and 4 L h<sup>-1</sup> was selected in irrigation treatments. The parameters affected the wetted soil volume of vertical wetting front advance  $Z_f$ , lateral wetting front advance within the soil profile  $R_s$  or at the surface  $R_f$ , were researched. The  $Z_f$  and  $R_s$  varied 43 to 58 cm and 54 to 60 cm, respectively. Different emitter discharges had no significant effects on  $Z_f$ ,  $R_s$  and  $R_f$ . Different water applications had significant effect on  $Z_f$  but, had no significant effects on  $R_s$  or  $R_f$ . The highest wetted soil volume was obtained as 122681.6 cm<sup>3</sup> irrigation at 50% depletion from the available water capacity of soil from by 4 L h<sup>-1</sup> emitter discharge use. The results showed that higher application rate favors the both vertical and lateral direction of water.

**Key words:** Trickle, irrigation, wetting front, wetted volume.

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